Phase IV: Production and Deployment

Step 23.0 Provide HF/S Inputs to ECPs

Overview

- This step will address development of engineering change proposals, specifically solutions to eliminate or attenuate adverse effects of problems including redesign of hardware, software solutions, changes to manning, training, tutoring, aiding, labeling and marking changes, instructions, procedures, or guards.

Inputs

- Requirements for ECPs

Outputs

- HF/S ECPs and HF/S aspects of system ECPs

23.1 Acquire and review HF/S lessons learned for the system or item

23.1.1 Acquire and review HF/S lessons learned for use procedures

23.1.2 Acquire and review HF/S lessons learned for human errors

23.1.3 Acquire and review HF/S lessons learned for human performance problems or difficulties

23.1.4 Acquire and review HF/S lessons learned for decision aiding

23.1.5 Acquire and review HF/S lessons learned for workloads and workload distributions

23.1.6 Acquire and review HF/S lessons learned for safety hazards

23.1.7 Acquire and review HF/S lessons learned for problems with the use environment

23.1.8 Acquire and review HF/S lessons learned for problems with information handling

23.1.9 Acquire and review HF/S lessons learned for problems with communications

23.1.10 Acquire and review HF/S lessons learned for problems with maintenance

23.1.11 Acquire and review HF/S lessons learned for problems with control systems

23.1.12 Acquire and review HF/S lessons learned for problems with logistic support including documentation

23.1.13 Acquire and review HF/S lessons learned for problems with life support

23.2 Identify human functions and tasks performed with the system or item

23.2.1 Review results of function analysis

23.2.2 Review baseline system function descriptions

23.2.3 Identify relevant human functions

- identify operator functions
- identify maintainer functions
- identify user functions

23.2.4 Identify critical tasks per function

23.3 Identify human-machine interfaces and requirements for critical tasks

23.3.1 Identify and describe human-hardware interfaces

23.3.2 Identify and describe human-computer interfaces

23.3.3 Identify and describe human-environment interfaces

23.3.4 Identify and describe human-information interfaces

23.3.5 Identify and describe human-human interfaces

23.3.6 Identify and analyze task requirements

23.4 Acquire T&E data

23.4.1 Identify and describe Develop HF/S test and evaluation measures

23.4.2 Conduct HF/S test and evaluation to identify problems and/or validate lessons learned data

- evaluate the role of man vs automation
- evaluate workloads
- evaluate human-hardware interfaces
- evaluate human-computer interfaces
- evaluate human-environment interfaces
- evaluate human-information interfaces
- evaluate human-human interfaces - communications
- evaluate procedures

- evaluate user documentation
- evaluate effects of use environments
- Integrate design problem T&E data with lessons learned data

23.5 Process HF/S issues

23.5.1 Identify HF/S issues

23.5.2 Classify HF/S issues in terms of causal factors and contributing conditions

23.5.3 Prioritize HF/S issues

23.5.4 Identify solutions to eliminate or attenuate adverse effects of issues

- requirements for redesign of hardware
- requirements for software solutions
- requirements for changes to manning
- requirements for training, tutoring, aiding
- requirements for labeling and marking changes
- requirements for instructions
- requirements for procedures

23.5.4. requirements for guards

23.5.5 Identify constraints on solutions

23.5.6 Tradeoff alternative solutions

23.6 Prepare ECPs/inputs to ECPs